

INSTRUCTION 7.4.5

A20 Software User Manual

1 Overview

A20 software is a tool specifically used for inspection file analysis and standardized management, aiming to improve the standardization of inspection and improve the accuracy and efficiency of data analysis. This manual aims to introduce the basic functions of A20 software, the format specifications of inspection files, and the analysis methods, so that users can use the software efficiently to complete inspection tasks.

2 Preface

System requirements: Operating system: Windows 10 22H2 or higher Memory: At least 16 GB CPU: Intel Core i5-8400 or higher performance

3 Software Installation

Double-click the installation package to install the inspection software. If you are overwriting or updating the software, please try to keep the installation directory unchanged.

4 Software Usage

Ensure that A20 and the upper computer are in the same local area network. When opening the upper computer, it will automatically connect to the device.

File code INS7.4.5-20250314002 R&D Department Level 2

Versions V1.0 Official version [2025.3.14]

Controlled by R&D Department

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Home



1. Tag navigation bar: Switch the main functions of the software, including Home, History, Equip, Alg, Setting, ExtCom, About.

2、Device State: View the current status of the device, including Link、GPS、V.S、W.S、Water、Sys Stat.

(1) Link: Displays the connection status of the device.

(2) GPS signal: Displays the number of GPS satellites. If the GPS is abnormal, abnormal information will be displayed.

(3) V.S (Vehicle Speed): Displays real-time vehicle speed in km/h.

(4) W.S (Wind Speed): Real-time wind speed, measured in m/s.

(5) Water (Wate concentration): The content of gas components in water.

(6) Sys Stat (system status): If the device is abnormal, relevant error code will be prompted. Click to display the error details.

For normal device status, please refer to the figure below.



Device State					
Link 🛜 🛜	💐 GPS	(∕) ∨.s	<mark>ല</mark> ്ല w.s	O Water	🗑 Sys Stat

3. Device Manager can shut down the device and unfold the map.

Device N	Janager			
U Power		🚺 Мар		
S	hutDown		Unfold	

(1) Click the Power button to send a shutdown command. The normal shutdown process is as follows: end the inspection - click Power button - wait for the device display to prompt that the shutdown is complete - turn off the device power.

(2) Click the Unfold button to unfold the map, the map will be displayed in a separate window. Click the button again or close the map window to retract the map.

4. Concentration curve: Displays the concentration curves of methane and ethane over a recent certain period of time and provides relevant operational functions. Referring to the following image.



(1) The value in the upper right corner of the curve is the real-time concentration value above and the incremental value below. The software will



calculate the background concentration of the device in real time. The incremental value is the difference between the real-time value and the background value.

(2) The color of the concentration curve indicates the possibility of the simultaneous presence of methane and ethane. The darker the color, the greater the possibility.

(3) Click the Clear Curve button in the upper right corner to clear the curve data. See below.



(4) Click the Reset Background button to recalculate the background value.When the concentration of the methane and ethane acetate curve fluctuates greatly, the background can be reset to reduce interference.

(5) Click the Time Range drop-down box to select the display time of the concentration curve: 1 minute, 2 minutes or 5 minutes.

Time Range	2 min ^
	1 min
	2 min
	5 min



(6) Click the Setting button to configure the curve display.

This configuration can control the way the curve is displayed. Reasonable configuration can make the concentration curve more intuitive. Especially when detecting small leaks, appropriate configuration can make gas mass display more obvious.



- Adaptive Ratio: Automatically adjust the ratio of the curve scale according to the concentration change of Methane and Ethane in the recent period.
- Turn off the scale of the Adaptive Ratio curve to set it to a fixed value.
- Min Difference in Y-Axis: The display range of the Y-axis of the concentration curve is usually the minimum concentration value (MinConc) to the maximum concentration value (MaxConc). A minimum value (MinDiff) is set here, and when the concentration difference is less than this value, the display range is MinConc to MinConc + MinDiff.
- Ethane Display Correction: When the device is working stably, the ethane detection value will stabilize around a value, which is considered to be the



zero point of ethane. The actual value of ethane is the difference between the detection value and the zero point. For example, if the detection value remains stable at around 10 ppb, the real-time detection value is 12 ppb, then the actual value of ethane is 2 ppb. How to configure ethane correction algorithm to determine ethane zero point: Auto – automatically calculates the zero point and displays the actual value, Manually – manually sets the current value as the zero point and displays the actual value; None – Display the detection value.

- Negative Correction: After ethane display correction, negative values may appear, and this option determines whether negative values are displayed.

5. Inspection Management: Inspection (start/end inspection task), Manual Alarm Point (manually add point), record alarm points/add points and set alarm algorithms.



Duration (inspection duration), Mileage (inspection distance), Suspicious Points (list of suspicious points), Conc (concentration)



ADD	New Task
Inspector :	
Task Name :	
Weathor :	浮尘
Temperature:	16
Humidity:	11
Wind Power:	≤3
Wind Dir:	西北
Location:	河北省石家庄市井陉县秀林镇307
CAN Can	cel ETR Confirm

(1) Click the inspection button to pop up the interface for creating an inspection task. The task information includes: Inspector, Task Name, Weather, Temperature, Humidity, Wind Speed, Wind Direction and Location. See the figure below.

After filling in the inspector and the inspection task name, click 'Confirm' to create the inspection task.

(2) When an alarm point comes, the system will pop up a window and emit an alarm sound. Referring to the following image.



ADD Suspicious Point					
Methane : 1863	.5 ppb / Etha	ine : 30.2 ppb			
Location : 河北省	省沧州市任丘市	荷各庄镇马召村	寿衣店		
Leak	LNGCar	GasStation	ExhaustGas		
Sewer	Other	Unhandled			
bewer	other	V			
Romark					
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The alarm point information will be displayed with the concentration value and Location of methane and ethane. Users can add Remark for the alarm points according to the actual situation, Leak, LNGCar, GasStation, ExhaustGas, Sewer (Biogas), Other, Unhandled (handle later).





After remarking, it will appear in the alarm point list. Click the alarm point in the list to edit it again using the Edit button.

(3) Click the Add Point button to manually add a new alarm point at the current location (only valid when the inspection has been started). Refering to the following image.

ADD Suspicious Point					
Methane: 1863.5 ppb / Ethane: 30.2 ppb					
	40 TTTTTTTTTTTTTT		开 汉店		
Leak 🗸	LNGCar	GasStation	ExhaustGas		
Sewer	Other	Unhandled			
Remark					
			Confirm		

(4) Click the Settings button to configure the inspection alarm algorithm. Refering to the following image.







- Alarm Sound: can switch on and off sound prompts.
- Select Alarm Mode: Sensitive Mode is more sensitive than Cautious Mode and can alert for small concentration changes.
- Set Methane Increase, Peak-to-Peak, Correlation.

That is, when the Methane Increase reaches 200 and the Peak-to-Peak value reaches 200, the alarm will be triggered if the Correlation is greater than 85. Non-professionals are advised to avoid modifying these configurations.

6. Map information: Displays the real-time location and wind direction of the vehicle, and after starting the inspection, the inspection trajectory and alarm point location of the vehicle will also be displayed.



- The map mode switching function is available in the upper right corner of the map:
- Free mode: You can adjust the map position freely.
- Follow mode: The map will automatically follow the vehicle's position movement.
- Follow mode (with the front of the car facing up): The map direction will change with the direction of the vehicle's movement.



History (historical task)

Click on the left tab navigation bar to switch to the historical task interface. Please refer to the following image.



1. On the left is the historical task list. After selecting a task, you can view the alarm list and inspection trajectory information on the right.

(1) Press and hold the Ctrl key to select multiple tracks and view them at the same time.

(2) Press and hold the Shift key to select multiple continuous tracks and view them at the same time.

2. The alarm list displays the alarm information of the selected task. You can choose to view Leak Point or display All alarm list through the drop-down list;

Click on the Alarm Point to view detailed information about the alarm point and the concentration curve at the time of the alarm. At the same time, you can modify the alarm type and add descriptive information to the alarm point.

Please refer to the figure below.





3. Map section description:

(1) The line along the street represents the trajectory of vehicle travel, and the color of the line represents the risk level of the detection value.

- (2) The white arrow indicates the wind direction.
- (3) The gray shaded area is the detection coverage area.
- (4) The fan-shaped area is the possible leakage direction.

4. After selecting the inspection task, you can export statistics Excel and export statistical reports.

(1) Click Export Excel to create an Excel file. Excel contains two sheets, among which the "Inspection Statistics" page contains the basic information of the selected task and the total inspection time and total distance statistics.

The "Alarm Points" page contains the alarm point list of the selected task.



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A	В	с	D	E	F		G	н	1
			A20 Inspect	tion Task Statist	ics				
Task Name	Start Time	Start Location	Patrol Personnel	Inspection Equipment	t Weather Condition	ns	Inspection Duration	Inspection Distance (KM)	
Untitled Task	2025/03/13 16:03:30	777777777777777		Unknown	ather: ?, Temperature: 18, Humi	ather: ?, Temperature: 18, Humidity: 20, Wind: 00:00:39		5.27	
									_
					Statistics:		00:00:39	5.27	
D17	✓ ③ fx								
A	В	С	D		E		F	G	н
			A20	Alarm Point					
Serial Number	Time of alarm	Alarm Coordinates(WGS84)	Alarm Lo	ocation	Alarm Concentration(CH4/C2H6)	Туре	ofalarm	Remarks Information	
1	2025/03/13 16:04:03	lat 36 58281 lng 115 29132	222222222222222222222222222222222222222		16439.4 / 670.4 PPB	16439.4 / 670.4 PPB Lea			

(3) Click the Export PDF Report button to create a PDF report, including a preview of all tasks and detailed information about alarm points.

AiLF ANMC Report

High-precision natural gas leak detection vehicle inspection report

Create Time: 2025/03/13 09:25:51

Creator :

LicensePlate : _____

TaskList

Serial Numb er	TaskName	StartTime	Duration	Mileage (Km)	Event PointCount
1	Untitled Task	2025/03/12 10:56:30	0h 5m	2.5	0
	Tota		0h 5m	2.5	0

Trajectory Overview





Setting (general setting)

ANNO	
Rame Forme	Setting
History	Connection Settings
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	Average Fig.11(4):1(3) Average winter(3)(6) Average Fig.11(4):1(2) Average Overhead Canse Fig.15(4):1(2) Average Average Average Average Average
	Sound Reminder
	When the stars have a seconded, it will be remoded * The seconder of the seconded, it will be remodel of the stars result in t
	Reput planning * Stabuy enoded: When there is a real alam point, the samog prompt flashes, and the land diagouns automatically in 5 seconds. Stabuy enode: When there is an analyze point, the samog prompt flashes, and the land diagouns automatically in 5 seconds. Stabular pended: When there is a real alam point, the samog prompt flashes, and the land diagouns automatically in 5 seconds. Stabular pended: When there is a real alam point.
	Personal for the and the second se
	MAGI SYSTEM Nuclei Factore See The factore
EstCom	

1. Connection Settings

(1) Host Address: The IP address of the device.

(2) Enabled by the panoramic camera and The overhead gimbal is enabled: Select to activate the corresponding device function. The top mounted gimbal is suitable for leak detection of underground pipes on sidewalks and green belts. $_{\circ}$

(3) Panoramic Front/Rear Camera IP: The IP address and password of the Panoramic Front/Rear Camera for video information.

(4) Overhead Camera: The IP address and password of the vehicle-mounted overhead laser gimbal.

(5) After the connection settings are saved, the software needs to be restarted to take effect.

2. Sound Reminder: You can select the sound reminder mode through the drop-down menu.



(1) When the alarm line is exceeded, it will be reminded: When the real-time value meets the alarm conditions, an alarm sound will be emitted.

(2) A single alarm is alerted only once: Each air mass is alerted once, and the alarm sound is only emitted when a new alarm point is triggered.

3. Page Alerts: You can select Pop-up Reminders or Flashing Alerts through the drop-down menu.

(1) Pop-up Reminders: When there is a new alarm point, a pop-up reminder will appear, and it will only disappear after the pop-up operation.

(2) Flashing Alerts: When there is a new alarm point, the warning prompt flashes and automatically disappears after 5 seconds.

4. Vehicle information

Pneumatic Delay: The time interval between the entry of gas from the intake to the device giving response, which helps to accurately locate the alarm location. Need to test and fill in after loading is completed.

ExtCom (docking interface)

The device setting provides an interface for device configuration, which is only used by qualified personnel to maintain the device.

In order to integrate with the customer's information management system, a set of interfaces has been opened for third-party software, through which detection information, device status, and alarm information can be obtained.

About

You can view the product name and version number and check for updates.